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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/710,145	06/22/2004	David Danovitch	CA920030004	4144

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BLDG. 300-482
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EXAMINER	
DEB, ANJAN K	

ART UNIT	PAPER NUMBER
2858	

DATE MAILED: 07/19/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

SM

Office Action Summary	Application No.	Applicant(s)	
	10/710,145	DANOVITCH ET AL.	
	Examiner	Art Unit	
	Anjan K. Deb	2858	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 June 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *22 June 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *06/22/2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to under 37 CFR 1.83(a) because they fail to show suitable descriptive legend such as "Test Device" in box 2 of Figures 1-3 as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

In addition to Replacement Sheets containing the corrected drawing figure(s), applicant is required to submit a marked-up copy of each Replacement Sheet including annotations indicating the changes made to the previous version. The marked-up copy must be clearly labeled as "Annotated Sheets" and must be presented in the amendment or remarks section that explains the change(s) to the drawings. See 37 CFR 1.121(d)(1). Failure to timely submit the proposed drawing and marked-up copy will result in the abandonment of the application.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-5, 7, 8, 11-14, 16, 18-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Czubatyj et al. (US 5,008,617 A).

Re claim 1, Czubatyj et al. discloses apparatus for functional testing of ultra large area, ultra large scale integrated circuits comprising electrically commoning (connected in common)(column 6 lines 1-6) contact pads (21, 23) (adhere to address lines 21,23)(adhere to pixel)(column 9 lines 40-52) disposed on a surface of a substrate, the apparatus comprising a container for confining a plurality of electrically conductive particles (powder)(75) said electrically conductive particles (chargeable powder)(see "electrical conductivity", column 9 lines 40-52) , each of said electrically conductive particles being in contact with other

electrically conductive particles so that said electrically conductive particles are electrically commoned, where at least some of said electrically conductive particles contact said contact pads (21, 23) (adhere to address lines 21,23) so that said contact pads are electrically commoned and means for maintaining said particles in contact with the surface of the substrate and with said contact pads (column 5 lines 33-44).

Re claim 2, Czubatyj et al. disclose substrate (column 5 line 63-68) comprises electronic circuits (integrated circuit) electrically connected to said contact pads (electrodes)(21,23), whereby the electronic circuits are electrically commoned (charge particles adhere to electrodes) due to contact between said electrically conductive particles and said contact pads.

Re claims 3-5, Czubatyj et al. disclose substrate include second group of contact pads disposed on a second surface of the substrate (opposing substrate)(column 5 line 63-67), the second group of contact pads not being in contact (not selected) (not adhere to non-functional elements)(column 4 lines 35-40) with said electrically conductive particles.

Re claim 7,8 Czubatyj et al. discloses electrically conductive particles has a surface of non-oxidizing electrically conductive and rigid material (carbon black material is conductive inherently rigid).

Re claim 11, Czubatyj et al. discloses electrical test device includes means for sequentially contacting (driven sequentially) separate pads of the second group of contact pads during testing by said test device (column 6 lines 1-6, lines 21-30).

Re claim 12, Czubatyj et al. discloses electrical test device tests the electronic circuits to detect open circuits (column 4 lines 1-8, column 5 lines 30-32).

Re claim 13, Czubatyj et al. discloses means for maintaining said particles in contact with the surface of the substrate comprises means for causing motion of the particles (chargeable particles agitated, vibration) toward the surface of the substrate and said contact pads, thereby maintaining electrical contact between said particles and said contact pads (column 10 lines 16-18).

Re claims 14, 19, 20 Czubatyj et al. discloses particle motion is caused by at least one of a shaking mechanism, a magnetic-field mechanism and an ultrasonic mechanism (column 10 lines 13-18) causing motion of the particles toward the surface of the substrate and the first group of contact pads, thereby maintaining electrical contact between said particles and the first group of contact pads (20,21,23)(column 5 lines 33-44).

Re claim 16, Czubatyj et al. discloses method for electrically commoning contact pads (particles adhere to functionally selected devices) located on a first surface of a substrate wherein each pad (21,23) is connected to a circuit supported by said substrate (Fig. 1), the method comprising the steps of providing a container (column 10 lines 4-18) for confining

electrically conductive particles 75 (chargeable powder)(Fig. 2), providing a supply of electrically conductive particles in said container placing and holding the substrate in said container (inherent) such that the pads contact said particles, and maintaining said particles in contact with other said particles and with said pads, whereby said pads are electrically commoned.

Re claim 18, Czubatyj et al. disclose the contact pads on the first surface of the substrate are a first group of contact pads, and the substrate includes a second group of contact pads (top and bottom pixel electrodes)(Fig. 3) located on a second surface of the substrate (opposing substrates)(column 5 line 63 to column 6), each of the second group of pads being connected to one of the circuits, and said method further comprises the step of contacting at least one of the second group of contact pads and said particles with a test device (only selected group of devices are tested) (column 3 line 67 to column 4 line 10) for testing a circuit connected between at least one pad of the second group of contact pads and at least one pad of the first group of contact pads.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 6, 9,10,15 rejected under 35 U.S.C. 103(a) as being unpatentable over Czubatyj et al. (US 5,008,617 A) in view of Kimura (US 20020060583 A1).

Re claims 6, 9, 10 Czubatyj et al. disclosed sub-micron size particles (sub micron powder) and the size of pads (circuit feature elements) have size in the range 1 to 50 microns (column 5 lines 19-21) but did not expressly disclose electrically conductive particles made of gold or platinum and are substantially spherical in shape and each have a diameter approximately one-third that of a contact pad in the first group of contact pads.

Kimura disclose conductive particles made of gold substantially spherical in shape having diameter in μm (micron) range.

At the time of the invention it would have been obvious for one of ordinary skill in the art to modify Czubatyj et al. by adding conductive particles made of gold substantially spherical in shape as disclosed by Kimura and making the size of the particles one third the size of the contact pads for increasing the connectivity between circuit features since Czubatyj et al. clearly suggests using particles that are smaller in size compared to a feature size of the circuit under test for enhancing circuit connectivity.

Re claim 15, Czubatyj et al. did not expressly disclose container has walls of a flexible material.

Kimura disclose container has walls made of flexible material (elastic polymeric).

At the time of the invention it would have been obvious for one of ordinary skill in the art to modify Czubatyj et al. by adding container having walls made of flexible material disclosed

by Kimura so as to facilitate movement of particles and for containing the particles in the container.

6. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Czubatyj et al. (US 5,008,617 A)

Re claim 17, Czubatyj et al. did not expressly disclose the step of removing contaminant from the surface of the substrate and from the first group of contact pads prior to said step of placing and holding the substrate within said container, but would have obvious to do so since it is a routine electrical testing procedure to clean test sample before testing to minimize contact resistances.

At the time of the invention it would have been obvious for one of ordinary skill in the art to modify Czubatyj et al. by adding a step of removing contaminant from the surface of the substrate and from the first group of contact pads prior to placing and holding the substrate within said container, but would have obvious to do so since it is a routine electrical testing procedure to clean test sample before testing to minimize contact resistances.

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Howells (US 5850144 A) discloses method for detecting leaks in a membrane using electrically conducting particles made of carbon black.

Ishikawa (US 20050046435) discloses method of testing microwave integrated circuit by contacting the circuit with electrically conductive particles that are in contact with other electrically conductive particles (formed by coating) so that circuit is commoned (circuit is completed) and defects in the circuit are determined by probing the circuit before and after coating the device with conductive particles.

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dr. Anjan K. Deb whose telephone number is 571-272-2228. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lefkowitz Edwards can be reached at 571-272-2180.

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7/16/05

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